

REMARKS

This paper is responsive to a Non-Final Office Action dated May 5, 2004. Claims 1-30 were examined. Claims 1-9, 26, and 30 stand rejected under 35 U.S.C. § 101. Claims 10-16, 18-25, and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,721,279 to Zhang et al. Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang. Claims 28 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang in view of U.S. Patent No. 5,852,630 to Langberg et al.

Notice of References Cited (PTO-892)

Applicant respectfully requests the Examiner to enter U.S Patent No. 5,852,630 to Langberg et al., cited in the Office Action, on a PTO form 892 and send a copy of the PTO form 892 to Applicant.

Rejections under 35 U.S.C. § 101

Claims 1-9, 26, and 30 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claim 1 has been amended to recite that the impairment compensation sequence is encoded by or transmitted in at least one readable medium selected from the set of a disk, tape or other magnetic, optical, or electronic storage medium and a network, wireline, wireless or other communications medium. Claim 26 has been amended to provide antecedent basis. Claim 30 has been cancelled.

Applicant respectfully maintains that the impairment compensation sequence of claims 1-9 and 26 is statutory subject matter. The Office Action states that “[t]he signal falls into the category of Nonfunctional Descriptive Material.” Applicants respectfully maintain that the impairment compensation sequence recited in claims 1-9 and 26 is not nonfunctional descriptive material. Nonfunctional descriptive material is “[d]escriptive material that cannot exhibit any functional interrelationship with the way computing processes are performed.” See MPEP § 2106 IV.B.1.(b). The impairment compensation sequence of claims 1-9 and 26 may be employed to conform a communications device to at least a subset of impairments that may be present in a communications channel and may be used to estimate the received amplitudes associated with all possible ucodes that could be transmitted by a remote modem (see, for

example, the Application beginning at least page 16, line 12). The impairment compensation sequence of claims 1-9 and 26 is directed to a manufacture which exhibits a functional interrelationship with the way computing processes are performed. Thus, the impairment compensation sequence of claims 1-9 and 26 is directed to statutory subject matter. Accordingly, Applicant respectfully requests that the rejection of claims 1-9, and 26 be withdrawn.

Art Rejections under 35 U.S.C. § 102

Claims 10-16, 18-25, and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Zhang.

Regarding claim 10, Applicant respectfully maintains that Zhang, alone or in combination with other references of record, fails to teach or suggest

an equalizer to equalize an impairment compensation sequence, the equalizer producing amplitude estimates of a sequence of symbols, the sequence organized to place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of potential impairments in each of N phases, wherein N is selected such that each potential impairment, if present, is periodic therein,

as required by claim 10. The Office Action relies on the symbols B_i^l of Zhang to supply this teaching. The training symbols B_i^l of Zhang (col. 5, line 60-61) are the PCM codewords of the lth level on the ith segment of a DIL (col. 7, lines 2-3). Assuming arguendo that the segments of the DIL of Zhang are similar to the claimed phases, Zhang merely teaches that each of i segments includes a PCM codeword of the lth level (col. 6, line 51-col. 7, line 4; col. 9, lines 13-30; col. 10, lines 45-65). Nowhere does Zhang teach or suggest a sequence organized to place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases, a required by claim 10. For these reasons, Applicant respectfully maintains that claim 10 distinguishes over Zhang and all references of record. Accordingly, Applicant respectfully requests that the rejection of claim 10 and all claims dependent thereon, be withdrawn.

Regarding claim 18, Applicant respectfully maintains that Zhang, alone or in combination with other references of record, fails to teach or suggest

receiving a sequence of symbols, the sequence organized to place at least one instance of each symbol from a predetermined set of symbols in each of N phases, wherein N is selected such that each potential impairment, if present, is periodic therein,

as recited by claim 18. The Office Action relies on the symbols B_i^l of Zhang to supply this teaching. The training symbols B_i^l of Zhang (col. 5, line 60-61) are the PCM codewords of the l th level on the i th segment of a DIL (col. 7, lines 2-3). Assuming arguendo that the segments of the DIL of Zhang are similar to the claimed phases, Zhang merely teaches that each of i segments includes a PCM codeword of the l th level (col. 6 line 51-col. 7, line 4; col. 9, lines 13-30; col. 10, lines 45-65). Nowhere does Zhang teach or suggest a sequence organized to place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases, as required by claim 18. For these reasons, Applicant respectfully maintains that claim 18 distinguishes over Zhang and all references of record. Accordingly, Applicant respectfully requests that the rejection of claim 18 and all claims dependent thereon, be withdrawn.

Art Rejections under 35 U.S.C. § 103

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang. Claims 28 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang and U.S. Patent No. 5,852,630 to Langberg et al.

Regarding claim 17, Applicant respectfully maintains that Zhang, alone or in combination with other references of record, fails to teach or suggest

a demodulator for demodulating a modulated impairment compensation sequence, the impairment compensation sequence including a sequence of amplitudes transmitted from terminal equipment, the sequence

organized to place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases,

as recited in claim 17. The Office Action relies on the symbols B_i^l of Zhang to supply this teaching. The training symbols B_i^l of Zhang (col. 5, line 60-61) are the PCM codewords of the lth level on the ith segment of a DIL (col. 7, lines 2-3). Assuming arguendo that the segments of the DIL of Zhang are similar to the claimed phases, Zhang merely teaches that each of i segments includes a PCM codeword of the lth level (col. 6 line 51-col. 7, line 4; col. 9, lines 13-30; col. 10, lines 45-65). Nowhere does Zhang teach or suggest a sequence organized to place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases, a required by claim 17. For these reasons, Applicant respectfully maintains that claim 17 distinguishes over Zhang and all references of record. Accordingly, Applicant respectfully requests that the rejection of claim 17 and all claims dependent thereon, be withdrawn.

Claims 28 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang in view of Langberg. Regarding claim 28, Applicant respectfully maintains that Zhang, alone or in combination with Langberg, or other references of record, fails to teach or suggest

a sequence of amplitudes transmitted from terminal equipment, the sequence organized to place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases,

as recited in claim 28. The Office Action apparently relies on the symbols B_i^l of Zhang to supply this teaching. The training symbols B_i^l of Zhang (col. 5, line 60-61) are the PCM codewords of the lth level on the ith segment of a DIL (col. 7, lines 2-3). Assuming arguendo that the segments of the DIL of Zhang are similar to the claimed phases, Zhang merely teaches that each of i segments includes a PCM codeword of the lth level (col. 6 line 51-col. 7, line 4; col. 9, lines 13-30; col. 10, lines 45-65). Nowhere does Zhang teach or suggest a sequence organized to

place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases, a required by claim 28.

Langberg fails to compensate for the shortcomings of Zhang. Langberg teaches establishing a communications connection using last known parameters. (Col. 2, lines 9-14) Langberg teaches sending a sequence of symbols selected from a known constellation (col. 5, lines 14-16), but nowhere teaches or suggests a sequence of amplitudes transmitted from terminal equipment, the sequence organized to place at least one instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases, as required by claim 28. Thus, Zhang, alone or in combination with Langberg, or other references of record, fails to teach or suggest the limitations of claim 28.

For these reasons, Applicant respectfully maintains that claim 28 distinguishes over Zhang and all references of record. Accordingly, Applicant respectfully requests that the rejection of claim 28 and all claims dependent thereon, be withdrawn.

In summary, claims 1-29 are in the case. All claims are believed to be allowable over the art of record, and a Notice of Allowance to that effect is respectfully solicited. Nonetheless, if any issues remain that could be more efficiently handled by telephone, the Examiner is requested to call the undersigned at the number listed below.

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Respectfully submitted,



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